United States Patent

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[72] Inventor **Frank L. Boone**
3448 Driftwood Circle, Cincinnati, Ohio 45239

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[54] **DISPENSING CONTAINER FOR FLOWABLE PASTY MATERIAL AND THE LIKE**
5 Claims, 7 Drawing Figs.

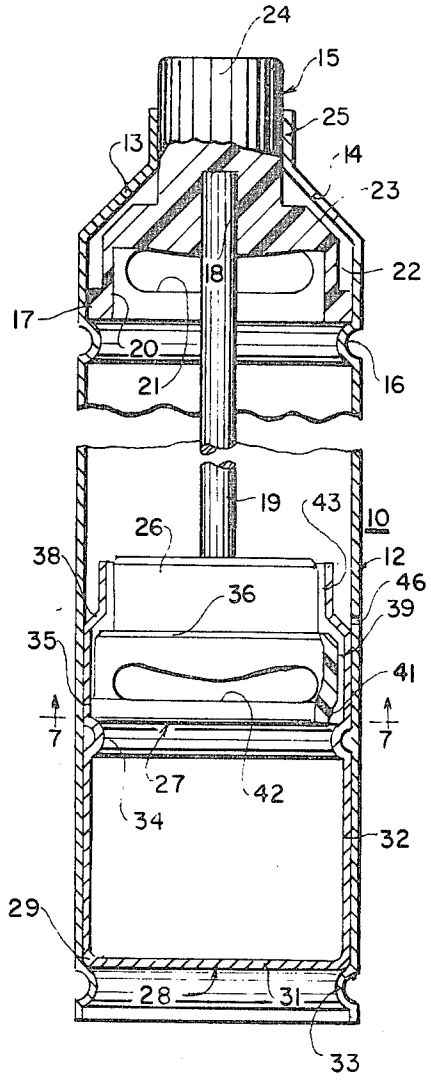
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[51] **Int. Cl.** **B65d 83/14**
[50] **Field of Search** 222/400.5, 389, 136, 319, 378, 386, 397, 399, 409, 501, 518, 386.5, 193

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Primary Examiner—Robert B. Reeves
Assistant Examiner—John P. Shannon, Jr.
Attorney—Pearce and Schaeperklaus

ABSTRACT: A dispensing container for flowable or pasty material which includes a pressure fluid container mounted in a body of a dispensing container at one end thereof. A resilient closure fitting is mounted at the other end and normally closes a discharge opening. When the resilient closure fitting is deformed, the discharge opening is opened. An actuator rod mounted in the closure fitting actuates the pressure fluid container to release gas under pressure which drives a piston along the dispensing container to discharge contents thereof.



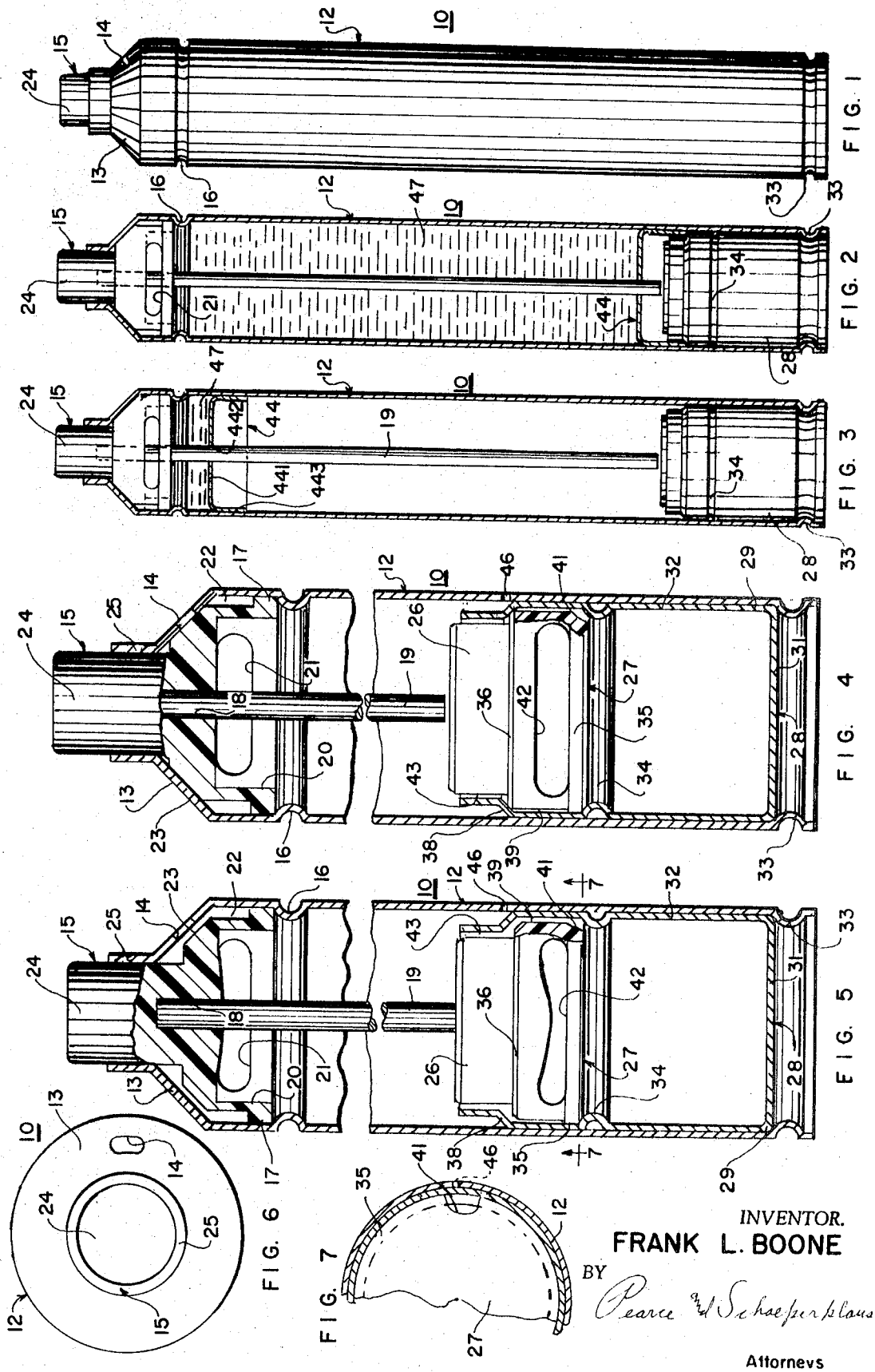


FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

FIG. 7

INVENTOR.
FRANK L. BOONE
BY
Pearce & Schaefer plaus.
Attornevs

DISPENSING CONTAINER FOR FLOWABLE PASTY MATERIAL AND THE LIKE

This invention relates to a dispensing container for flowable materials such as liquid and pasty materials and the like.

An object of this invention is to provide a fluid-pressure-actuated dispenser for flowable materials.

A further object of this invention is to provide a pressure-actuated dispenser for such material in which a fluid under pressure causes discharge of the material but the pressure fluid is separated from the material dispensed.

A further object of this invention is to provide such a dispensing container in which the dispensing container is under pressure only during dispensing and in which pressure in the dispensing container is released when contents are not being dispensed.

Briefly, this invention provides a dispensing container for flowable material such as tooth paste or for liquid materials or the like which includes an elongated hollow body having a discharge opening in a wall thereof adjacent one end. A resilient closure for the discharge opening is mounted in the body in position normally to close the discharge opening. The closure can be deformed to open a passageway to the discharge opening permitting escape of the material through the discharge opening. A container of fluid under pressure is mounted in the body at the opposite end thereof and is opened by a rod mounted in the closure for the discharge opening. The rod engages a closure of the gas container to open same and release fluid under pressure therefrom which causes discharge of contents of the dispensing container. Means is provided for releasing pressure inside the body of the dispensing container when the pressure fluid container is closed so that the dispensing container is under increased pressure only during dispensing of contents of the dispensing container. The propellant is held in a container separate from the product so that normally only the propellant container is pressurized.

The above and other objects and features of the invention will be apparent to those skilled in the art to which this invention pertains from the following detailed description and the drawing, in which:

FIG. 1 is a view in side elevation of a dispensing container constructed in accordance with an embodiment of this invention;

FIG. 2 is a view in lengthwise section of the dispensing container shown in FIG. 1 with the container full;

FIG. 3 is a view in lengthwise section of the container shown in FIGS. 1 and 2 with contents partially dispensed;

FIG. 4 is a fragmentary view in lengthwise section on an enlarged scale showing the dispensing container and a pressure fluid container thereof in closed position;

FIG. 5 is a fragmentary view in lengthwise section on an enlarged scale showing the dispensing container and the pressure fluid container open;

FIG. 6 is a top plan view of the dispensing container; and

FIG. 7 is a fragmentary view in section taken on the line 7—7 in FIG. 5.

In the following detailed description and the drawing, like reference characters indicate like parts.

In FIGS. 1–3 inclusive is shown a dispensing container 10 constructed in accordance with an embodiment of this invention. The dispensing container 10 includes a tubular casing or body 12 having a frustoconic portion 13 adjacent one end thereof. A discharge opening 14 is provided in the frustoconic portion 13. The discharge opening is normally closed by a resilient deformable closure fitting 15. The closure fitting 15 is supported by a circumferential bead 16 formed in the body 12. An annular flange 17 (FIGS. 4 and 5) on the body of the closure fitting 15 rests on the bead 16. The closure fitting is provided with an axial socket 18 in which an end portion of a rigid rod 19 is seated. A counterbore 20 is formed in the inner end portion of the fitting 15 surrounding the rod 18. A transverse opening 21 in the fitting 15 communicates with the counterbore 20 and with an annular space 22 surrounding the fitting 15 below the discharge opening 14. A frustoconic wall portion 23 of the fitting 15 is complementary to and normally fits against the frustoconic portion 13 of the body to close the discharge opening 14. A plug portion 24 of the fitting 15 extends outwardly of the tubular body 12 through a neck portion 25 of the body 12 which fits closely around the plug portion 24. When the plug portion 24 is pushed inwardly, the closure fitting 15 is deformed as shown in FIG. 5 to provide a passageway from the interior of the body 12 through the counterbore 20, the transverse opening 21, and the annular space 22 to the discharge opening 14. In addition, when the plug portion 24 is pushed inwardly, the rigid rod 19 is pushed downwardly as the fitting 15 is deformed.

The lower end of the rod 19 is engageable with a plug portion 26 of a resilient closure member 27 of a pressure fluid container 28. The pressure fluid container 28 includes a body 29 of generally cup shape having a bottom wall 31 and a cylindrical sidewall 32 which conforms to and fits tightly inside the body 12. A circumferential bead 33 in the body 12 is engaged by the outer edge of the bottom wall 31 to hold the fluid pressure container in place inside the body 12.

A circumferential bead 34 on the sidewall 32 of the body of the pressure fluid container 28 underlies and supports the resilient closure member 27. An annular flange 35 of the closure member 27 rests on the bead 34. A shoulder 36 of the closure member 27 normally engages a frustoconic neck 38 of the body 29 as shown in FIG. 4 to close the pressure fluid container. An annular space 39 is formed between the wall 32 of the body 29 below the frustoconic neck 38 and the body of the closure member 27. A slot 41 in the flange 35 provides communication between the space 39 and the interior of the pressure fluid container 28. A transverse opening 42 is formed in the closure member 27 below the shoulder 36 to permit ready deformation of the closure member 27. When the rod 19 is pushed downwardly to the FIG. 5 position, the closure member 27 is deformed to free the shoulder 36 from the frustoconic neck 38 so that contents of the pressure fluid container can pass the shoulder 36 into a space 43 surrounding the plug portion 26 of the closure member 27. The fluid under pressure engages a hollow inverted cup-shaped piston member 44 (FIGS. 2 and 3) and drives the piston member 44 along the body 12 from the FIG. 2 position toward the FIG. 3 position to expel contents of the dispensing container 10, the piston 44 serving to separate the fluid under pressure from the contents of the dispensing container 10. THe piston 44 includes a disc-shaped body 441 having a central bore 442 through which the rod 19 extends and an annular skirt 443 which fits closely against the interior of the wall of the body 12. The piston 44 moves freely along the rod 19 and is guided by the rod 19. The piston holds the rod 19 centered in the body 12.

A small opening 46 (FIGS. 4 and 5) is formed in the body 12 of the dispensing container 10 opposite the frustoconic neck 38 of the pressure fluid container 28. The opening 46 permits escape of excess pressure fluid when pasty contents 47 (FIGS. 2 and 3) of the dispensing container 10 are not being dispensed. THe pressure fluid container 28 can contain a fluid of the type used as a propellant in aerosol containers and the like which is normally a gas but which is a liquid under increased pressures. The pressure fluid contained in the pressure container can be one of the materials designated "Ereon" or can be a hydrocarbon propellant such as isobutane.

When the plug portion 24 of the closure fitting 15 is pushed inwardly contents of the dispensing container 10 are discharged through the opening 14. When the plug portion 24 is released, resilience of the closure fitting 15 and the closure member 27 causes them to return to their normal position closing the discharge opening 14 and sealing the pressure fluid container 28, respectively. The closure fitting 15 and the closure member 27 can be formed of appropriate resilient material such as polyethylene or other resilient plastic material or the like. The pressure inside the dispensing container 10 is released through the opening 46, and increased pressure is applied to the interior of the body 12 of the dispensing container

10 only during dispensing. The opening 46 is sufficiently small that pressure of the pressure fluid is not substantially dissipated while the pressure fluid container is open but the pressure is dissipated once the pressure fluid container is closed. The dispensing container is only partially pressurized while dispensing and can be formed of relatively lightweight plastic material or the like. Only the propellent or pressure fluid container 28 is fully pressurized at all times, and the product and propellant are normally separated. The dispensing container can be used for dispensing pasty materials such as toothpaste or the like or liquid materials such as shampoo and the like.

The dispensing container is subject to structural modification without departing from the spirit and scope of the invention.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A dispensing container for flowable material which comprises an elongated hollow body, a resilient closure fitting mounted in the body adjacent one end thereof, there being a discharge opening in the body opposite the closure fitting, the closure fitting normally closing the discharge opening, a container for fluid under pressure mounted on the body adjacent the opposite end thereof, means for deforming the closure fitting to open a passageway between the interior of the body and the discharge opening, and actuator rod means extending between the closure fitting and the pressure fluid container, the actuator rod means being arranged to open the pressure fluid container when the closure fitting is deformed to release fluid under pressure into the hollow body to cause discharge of flowable material from the dispensing container through the discharge opening, pressure inside the body urging the closure fitting to closed position, there being an opening in the wall of the body to release pressure in the body when the pressure fluid container is closed.

2. A dispensing container as in claim 1 wherein there is a piston in the body movable therealong, the piston separating pressure fluid in the dispensing container from the contents of the dispensing container, the piston including a main portion extending transversely of the dispensing container and a skirt extending from the edge of the main portion and away from the discharge opening.

3. A dispensing container as in claim 2 wherein the piston is provided with a central bore through which the actuator rod means extends, the piston holding the actuator rod means in centered position in the body.

4. A dispensing container as in claim 1 wherein the opening in the wall of the body is adjacent the pressure fluid container.

5. A dispensing container as in claim 1 wherein the closure fitting and a portion of the body have complementary frustoconic sections, the discharge opening being formed in the frustoconic section of the body, a plug portion of the closure fitting extends outwardly of the body, an opposite end portion of the closure fitting rests on a bead in the wall of the body, and a passageway extends through the closure fitting from the opposed end to the frustoconic section thereof, the closure fitting being deformed by inward pushing of the plug portion to provide communication between the interior of the body and the discharge opening through the passageway.